PENGARUH PENGUATAN GERAKAN LITERASI DAN PEMBELAJARAN IPA TERHADAP KEMAMPUAN LITERASI SAINS DAN MINAT SISWA TERHADAP SAINS

TESIS

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister Pendidikan (M.Pd) pada Program Studi Pendidikan Dasar

Oleh

Erna Yuliana

1707730

PROGRAM STUDI PENDIDIKAN DASAR

SEKOLAH PASCASARJANA

UNIVERSITAS PENDIDIKAN INDONESIA

2021

LEMBAR HAK CIPTA

PENGARUH PENGUATAN GERAKAN LITERASI DAN PEMBELAJARAN IPA TERHADAP KEMAMPUAN LITERASI SAINS DAN MINAT SISWA TERHADAP SAINS

Oleh

Erna Yuliana

Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Master Pendidikan (M.Pd) pada Program Studi Pendidikan Dasar

Universitas Pendidikan Indonesia

Juli, 2021

LEMBAR PENGESAHAN TESIS

ERNA YULIANA

PENGARUH PENGUATAN GERAKAN LITERASI DAN PEMBELAJARAN IPA TERHADAP KEMAMPUAN LITERASI SAINS DAN MINAT SISWA TERHADAP SAINS

disetujui dan disahkan oleh

Pembimbing I

Prof. Dr. phil. H. Ari Widodo, M.Ed.

NIP. 196705271992031001

Pembimbing II

Dr. Hj. Ernawulan Syaodih, M.Pd.

NIP. 196510011998011001

Mengetahui

Ketua Program Studi Pendidikan Dasar

Prof. Dr. päd. H. Wahyu Sopandi, M.A

NIP. 196605251990011001

ABSTRAK

PENGARUH PENGUATAN GERAKAN LITERASI DAN PEMBELAJARAN IPA TERHADAP KEMAMPUAN LITERASI SAINS DAN MINAT SISWA TEHADAP SAINS

Erna Yuliana

1707730

Kemampuan literasi sains sangat penting untuk dikuasai siswa dalam menghadapi tantangan kehidupan di abad 21 ini tetapi berdasarkan hasil survei PISA 2018, siswa Indonesia masih berada di peringkat sepuluh terbawah. Rendahnya kemampuan literasi sains siswa Indonesia diantaranya disebabkan oleh penggunaan buku sains di sekolah yang lebih menekankan pada dimensi konten daripada dimensi proses dan konteks sebagaimana tuntutan PISA, faktor lainnya adalah masih rendahnya minat siswa terhadap sains karena anggapan tentang sains sebagai pelajaran yang sulit dan membosankan. Dengan latar belakang tersebut maka tujuan dari penelitian ini yaitu untuk meningkatkan kemampuan literasi sains dan minat siswa terhadap sains melalui pembelajarn IPA disertai pemberian perlakuan berupa kegiatan membaca buku sains populer yang telah ditentukan jenis dan temanya setiap hari. Metode penelitian yang digunakan adalah pre eksperimen dengan desain penelitian *pretest and posttest design*. Sampel penelitian sebanyak 45 siswa kelas VI sekolah dasar swasta di Kota Bandung. Kemampuan literasi sains diukur dengan menggunakan soal literasi sains pada aspek kompetensi dengan indikator yang mengacu pada kerangka kerja PISA 2018 sedangkan pengukuran minat sains siswa dilakukan dengan menggunakan skala sikap yang disusun berdasarkan pada hasil analisis jurnal. Berdasarkan hasil analisis data dengan menggunakan uji hipotesis dan diperoleh nilai signifikansi $0{,}000 < \alpha = 0{,}05$ maka disimpulkan bahwa penguatan gerakan literasi dan pembelajaran IPA berpengaruh positif terhadap kemampuan literasi sains dan minat siswa terhadap sains.

Kata Kunci : Kemampuan Literasi Sains, Minat Siswa Terhadap Sains, Gerakan literasi.

ABSTRACT

THE EFFECT OF STRENGTHENING THE LITERACY MOVEMENT AND SCIENCE LEARNING ON SCIENTIFIC LITERACY SKILLS AND STUDENTS' INTEREST IN SCIENCE

Erna Yuliana

1707730

Scientific literacy skills are very important for students to master in facing the challenges of life in the 21st century but based on the results of the 2018 PISA survey, Indonesian students are still in the bottom ten ranks. The low scientific literacy skills of Indonesians students is partly due to the use of science books at school which emphasizes the content dimension rather than the process and context dimensions as demanded by PISA, another factor is the low interest of students in science because of assumption that science is a difficult and boring subject. With this background, the purpose of this research is to improve scientific literacy skills and students interest in science through science learning accompanied by treatment in the form of reading popular science books every day with predetermined types and themes. The research methode used is pre experimental research design with pretest and posttest design. The research sample was 45 students of class VI private elementary schools in the city of Bandung. Scientific literacy ability is measured using scientific literacy question in the competencies aspect with indicators referring to the 2018 PISA framework, while the measurement of students scientific interest is carried out using a questionnaire compiled based on the result of journal analysis. Based on the results of data analysis using hypothesis test and obtained a significance value of $0.000 < \alpha = 0.05$, it is conclude that strengthening the literacy movement and learning science has a positive effect on scientific literacy skills and students'interest in science.

Keywords : scientific literacy skills, students' interest in science, literacy programs.

DAFTAR ISI

DAFTAR PUSTAKA

Abidin, Y., Mulyati, T., & Yunansah, H. (2017). Pembelajaran Literasi Strategi Meningkatkan Kemampuan Literasi Matematika, Sains, Membaca, dan Menulis. In *Jakarta: Bumi Aksara*.

Adisendjaja, Y. H. (2008). Analisis buku ajar biologi sma kelas x di kota bandung berdasarkan literasi sains. *Bandung: Jurusan Pendidikan Biologi, FMIPA Universitas Pendidikan Indonesia*.

Afriana, J., Permanasari, A., & Fitriani, A. (2016). Penerapan project based learning terintegrasi STEM untuk meningkatkan literasi sains siswa ditinjau dari gender. *Jurnal Inovasi Pendidikan IPA*, *2*(2), 202–212.

Agustin, L., & Widodo, W. (2019). Penggunaan Interactive E-Book IPA Untuk Meningkatkan Kemampuan Literasi Sains Siswa SMP. *Pendidikan Sains*, *7*(2).

Ainley, M., & Ainley, J. (2011). A cultural perspective on the structure of student interest in science. *International Journal of Science Education*, *33*(1), 51–71.

Ainley, M., Hillman, K., & Hidi, S. (2002). Gender and interest processes in response to literary texts: Situational and individual interest. *Learning and Instruction*, *12*(4), 411–428.

Alindra, A. L., Widodo, A. W., Rahman, T. R., & Riandi, R. R. (2020). Analysis of

Learning Activity Facilitating Argumentation Skill on Cloning Topic in Islamic Senior High Schools by Using Video. *Thabiea : Journal of Natural Science Teaching*, *3*(1), 1. https://doi.org/10.21043/thabiea.v3i1.7350

Amalia Firdausy, B. (2017). Keefektifan Interactive E-Book IPA untuk Meningkatkan Kemampuan Literasi Sains Siswa SMP. *PENSA E-JURNAL: PENDIDIKAN SAINS*, *5*(03).

Amri, S., & Rochmah, E. (2021). Pengaruh Kemampuan Literasi Membaca Terhadap Prestasi Belajar Siswa Sekolah Dasar. *EduHumaniora| Jurnal Pendidikan Dasar Kampus Cibiru*, *13*(1), 52–58.

Anelli, C. (2011). Scientific literacy: What is it, are we teaching it, and does it matter. *American Entomologist*, *57*(4), 235–244.

Anggraeni, P., Sopandi, W., & Widodo, A. (2018). Profil Pertanyaan Inkuiri Guru pada Pembelajaran IPA di Sekolah Dasar. *Mimbar Sekolah Dasar*, *5*(2), 75. https://doi.org/10.17509/mimbar-sd.v5i2.11441

Antasari, I. W. (2016). Dukungan orang tua dalam membangun literasi anak. *Edulib*, *6*(2).

Antoro, B. (2017). *Gerakan Literasi Sekolah dari pucuk hingga akar: sebuah refleksi*. Direktorat Jenderal Pendidikan Dasar dan Menengah.

Ardasheva, Y., Wang, Z., Roo, A. K., Adesope, O. O., & Morrison, J. A. (2018). Representation visuals' impacts on science interest and reading comprehension of adolescent English learners. *The Journal of Educational Research*, *111*(5), 631–643.

Ardianto, D., & Pursitasari, I. D. (2017). Do middle school science textbook enclose an entity of science literacy? *Jhss (Journal of Humanities and Social Studies)*, *1*(1), 24–27.

Arief, M. K., & Utari, S. (2015). Implementation Of Levels Of Inquiry On Science Learning To Improve Junior High School Student's Scientific Literacy Penerapan Levels Of Inquiry Pada Pembelajaran Ipa Untuk Meningkatkan Literasi Sains Siswa SMP. *Jurnal Pendidikan Fisika*.

Arisanti, W. O. L., Sopandi, W., & Widodo, A. (2017). Analisis Penguasaan Konsep Dan Keterampilan Berpikir Kreatif Siswa Sd Melalui Project Based Learning. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, *8*(1), 82. https://doi.org/10.17509/eh.v8i1.5125

Aryani, K., Suwono, A., & Parno, H. (2016). Profil kemampuan literasi sains siswa SMPN 3 Batu. *Prosiding Seminar Nasional Pendidikan IPA*, 847–855.

Asyhari, A. (2015). Profil peningkatan kemampuan literasi sains siswa melalui pembelajaran saintifik. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, *4*(2), 179–191.

Atina, A., Alfarisa, S., & Toruan, P. L. (2019). Penyuluhan Peran Ilmu Fisika Dalam Bidang Kesehatan Pada Siswa SMAN 1 Talang Kelapa Banyuasin. *Jurnal Pengabdian Masyarakat MIPA Dan Pendidikan MIPA*, *3*(2), 48–52.

Awe, E. Y., & Benge, K. (2017). Hubungan antara minat dan motivasi belajar dengan hasil belajar ipa pada siswa SD. *Journal of Education Technology*, *1*(4), 231–238.

Azimi, A., Rusilowati, A., & Sulhadi, S. (2017). Pengembangan Media Pembelajaran IPA Berbasis Literasi Sains untuk Siswa Sekolah Dasar. *PSEJ (Pancasakti Science Education Journal)*, *2*(2), 145–157.

Bangert-Drowns, R. L., Hurley, M. M., & Wilkinson, B. (2004). The effects of school-based writing-to-learn interventions on academic achievement: A meta-analysis. *Review of Educational Research*, *74*(1), 29–58.

Banilower, E. R., Smith, P. S., Weiss, I. R., Malzahn, K. A., Campbell, K. M., & Weis, A. M. (2013). Report of the 2012 national survey of science and mathematics education. *Horizon Research, Inc.(NJ1)*.

Barnard-Brak, L., Stevens, T., & Ritter, W. (2017). Reading and mathematics equally important to science achievement: results from nationally-representative data. *Learning and Individual Differences*, *58*, 1–9.

Basam, F., Rusilowati, A., & Ridlo, S. (2017). Analysis of Science Literacy Learning with Scientific Inquiry Approach in Increasing Science Competence

of Students. *Journal of Primary Education*, *6*(3), 174–184.

Bayat, N., Sekercioglu, G., & Bakir, S. (2014). The relationship between reading comprehension and success in science. *Egitim ve Bilim*, *39*(176).

Brigandt, I. (2016). Why the difference between explanation and argument matters to science education. *Science & Education*, *25*(3–4), 251–275.

Britt, M. A., Richter, T., & Rouet, J.-F. (2014). Scientific literacy: The role of goal-directed reading and evaluation in understanding scientific information. *Educational Psychologist*, *49*(2), 104–122.

Brunner, J. L. (2019). Teachers' Use of Educative Features in Guides for Nature of Science Read-Alouds. *Science & Education*, *28*(3), 413–437.

Bybee, R., & McCrae, B. (2011). Scientific literacy and student attitudes: Perspectives from PISA 2006 science. *International Journal of Science Education*, *33*(1), 7–26.

Bybee, R. W. (2008). Scientific literacy, environmental issues, and PISA 2006: The 2008 Paul F-Brandwein lecture. *Journal of Science Education and Technology*, *17*(6), 566–585.

Caponera, E., Sestito, P., & Russo, P. M. (2016). The influence of reading literacy on mathematics and science achievement. *The Journal of Educational Research*, *109*(2), 197–204.

Cervetti, G. N., Barber, J., Dorph, R., Pearson, P. D., & Goldschmidt, P. G. (2012). The impact of an integrated approach to science and literacy in elementary school classrooms. *Journal of Research in Science Teaching*, *49*(5), 631–658.

Cervetti, G. N., Bravo, M. A., Hiebert, E. H., Pearson, P. D., & Jaynes, C. A. (2009). Text genre and science content: Ease of reading, comprehension, and reader preference. *Reading Psychology*, *30*(6), 487–511.

Chang, H.-P., Chen, C.-C., Guo, G.-J., Cheng, Y.-J., Lin, C.-Y., & Jen, T.-H. (2011). The development of a competence scale for learning science: Inquiry and communication. *International Journal of Science and Mathematics*

Education, *9*(5), 1213–1233.

Chang, Y.-M., Wang, I.-C., & Ma, M.-Y. (2016). Efficacy of supplementary image schemes on reading motivation and comprehension. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(5), 1153–1162.

Chen, A., Darst, P. W., & Pangrazi, R. P. (1999). What constitutes situational interest? Validating a construct in physical education. *Measurement in Physical Education and Exercise Science*, *3*(3), 157–XXX.

Chen, F., Shi, Y., & Xu, F. (2009). An analysis of the Public Scientific Literacy study in China. *Public Understanding of Science*, *18*(5), 607–616.

Cheuk, T. (2016). Discourse practices in the new standards: The role of argumentation in common core-era next generation science standards classrooms for English language learners. *The Electronic Journal for Research in Science & Mathematics Education*, *20*(3).

Chiappetta, E. L., Fillman, D. A., & Sethna, G. H. (1991). A method to quantify major themes of scientific literacy in science textbooks. *Journal of Research in Science Teaching*, *28*(8), 713–725.

Chiappetta, E. L., Sethna, G. H., & Fillman, D. A. (1993). Do middle school life science textbooks provide a balance of scientific literacy themes? *Journal of Research in Science Teaching*, *30*(7), 787–797.

Choi, A., Hand, B., & Greenbowe, T. (2013). Students' written arguments in general chemistry laboratory investigations. *Research in Science Education*, *43*(5), 1763–1783.

Choi, K., Lee, H., Shin, N., Kim, S., & Krajcik, J. (2011). Re-conceptualization of scientific literacy in South Korea for the 21st century. *Journal of Research in Science Teaching*, *48*(6), 670–697.

Cromley, J. G. (2009). Reading achievement and science proficiency: International comparisons from the programme on international student assessment.

Reading Psychology, *30*(2), 89–118.

Cuevas, J. A., Russell, R. L., & Irving, M. A. (2012). An examination of the effect of customized reading modules on diverse secondary students' reading comprehension and motivation. *Educational Technology Research and Development*, *60*(3), 445–467.

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology*, *33*(6), 934.

DeBoer, G. E. (2000). Scientific literacy: Another look at its historical and contemporary meanings and its relationship to science education reform. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, *37*(6), 582–601.

Delgadova, E. (2015). Reading literacy as one of the most significant academic competencies for the university students. *Procedia-Social and Behavioral Sciences*, *178*, 48–53.

Demirel, M., & Caymaz, B. (2015). Prospective science and primary school teachers' self-efficacy beliefs in scientific literacy. *Procedia-Social and Behavioral Sciences*, *191*, 1903–1908.

Deng, Y., Kelly, G. J., & Deng, S. (2019). The influences of integrating reading, peer evaluation, and discussion on undergraduate students' scientific writing. *International Journal of Science Education*, *41*(10), 1408–1433.

Development, O. for E. C. and. (2016). *PISA 2015 results: Excellence and equity in education*. OECD.

Dinata, A. N., Adisendjaja, Y. H., & Amprasto, A. (2018). Pengaruh Field Trip terhadap Kemampuan Literasi Sains dan Sikap terhadap Sains Siswa SMA pada Materi Ekosistem. *Assimilation: Indonesian Journal of Biology Education*, *1*(1), 8–13.

Dori, Y. J., Avargil, S., Kohen, Z., & Saar, L. (2018). Context-based learning and metacognitive prompts for enhancing scientific text comprehension. *International Journal of Science Education*, *40*(10), 1198–1220.

Duschl, R. (2008). Science education in three-part harmony: Balancing conceptual, epistemic, and social learning goals. *Review of Research in Education*, *32*(1), 268–291.

Eisenhart, M., Finkel, E., & Marion, S. F. (1996). Creating the conditions for scientific literacy: A re-examination. *American Educational Research Journal*, *33*(2), 261–295.

Fakhriyah, F., Masfuah, S., Roysa, M., Rusilowati, A., & Rahayu, E. S. (2017). Student's Science Literacy in the Aspect of Content Science? *Jurnal Pendidikan IPA Indonesia*, *6*(1), 122870.

Fang, Z., & Wei, Y. (2010). Improving middle school students' science literacy through reading infusion. *The Journal of Educational Research*, *103*(4), 262–273.

Fangestika, D. (2018). Pelaksanaan Gerakan Literasi DI Sekolah. *Basic Education*, *7*(35), 3–501.

Faradina, N. (2017). pengaruh program gerakan literasi sekolah terhadap minat baca siswa di SD Islam Terpadu Muhammadiyah An-Najah Jatinom Klaten. *Hanata Widya*, *6*(8), 60–69.

Fatmala, S. A., Sujana, A., & Maulana, M. (2017). Pembelajaran Kontekstual Untuk Meningkatkan Literasi Sains Siswa SD Kelas V Pada Materi Peristiwa Alam. *Jurnal Pena Ilmiah*, *2*(1), 211–220.

Feinstein, N. (2011). Salvaging science literacy. *Science Education*, *95*(1), 168–185.

Flick, L. B., & Lederman, N. G. (2002). The value of teaching reading in the context of science and mathematics. *School Science and Mathematics*, *102*(3), 105–

107.

Fouad, K. E., Masters, H., & Akerson, V. L. (2015). Using history of science to teach nature of science to elementary students. *Science & Education*, *24*(9), 1103–1140.

Fraenkel, W., & Wallen, N. (2012). *Hyun (2012). How to design and evaluate research in education*. New York: McGraw-Hill.

Froese-Germain, B. (2010). The OECD, PISA and the Impacts on Educational Policy. *Canadian Teachers' Federation (NJ1)*.

Gentilini, L. M., & Greer, R. D. (2020). Establishment of conditioned reinforcement for reading content and effects on reading achievement for early-elementary students. *The Psychological Record*, *70*(2), 327–346.

Ghaderi, M. (2010). The comparison analysis of the science textbooks and teacher's guide in Iran with America (science anytime). *Procedia - Social and Behavioral Sciences*, *2*(2), 5427–5440. https://doi.org/10.1016/j.sbspro.2010.03.886

Gilbert, J. K., Bulte, A. M. W., & Pilot, A. (2011). Concept development and transfer in context-based science education. *International Journal of Science Education*, *33*(6), 817–837.

Glynn, S. M., & Muth, K. D. (1994). Reading and writing to learn science: Achieving scientific literacy. *Journal of Research in Science Teaching*, *31*(9), 1057–1073.

Gormally, C., Brickman, P., & Lutz, M. (2012). Developing a test of scientific literacy skills (TOSLS): Measuring undergraduates' evaluation of scientific information and arguments. *CBE—Life Sciences Education*, *11*(4), 364–377.

Gott, R., & Duggan, S. (1996). Practical work: its role in the understanding of evidence in science. *International Journal of Science Education*, *18*(7), 791–806.

Graham, S., & Hebert, M. (2011). Writing to read: A meta-analysis of the impact

of writing and writing instruction on reading. *Harvard Educational Review*, *81*(4), 710–744.

Groves, F. H. (2016). A longitudinal study of middle and secondary level science textbook vocabulary loads. *School Science and Mathematics*, *116*(6), 320–325.

Gurria, A. (2016). PISA 2015 results in focus. *PISA in Focus*, *67*, 1.

Gyllenpalm, J., Rundgren, C.-J., Lederman, J., & Lederman, N. (2021). Views About Scientific Inquiry: A Study of Students' Understanding of Scientific Inquiry in Grade 7 and 12 in Sweden. *Scandinavian Journal of Educational Research*, 1–19.

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74. https://doi.org/10.1119/1.18809

Hall, S. S., Maltby, J., Filik, R., & Paterson, K. B. (2016). Key skills for science learning: the importance of text cohesion and reading ability. *Educational Psychology*, *36*(2), 191–215.

Hamidah, M. (2019). *Penerapan Strategi Writing to Learn untuk Meningkatkan Kemampuan Kognitif dan Literasi Sains Siswa SMA pada Materi Optik*. Universitas Indonesia.

Hand, B. M., Alvermann, D. E., Gee, J., Guzzetti, B. J., Norris, S. P., Phillips, L. M., Prain, V., & Yore, L. D. (2003). Message from the "Island Group": What is literacy in science literacy? *Journal of Research in Science Teaching*, *40*(7), 607–615.

Hansson, L., Leden, L., & Thulin, S. (2020). Book talks as an approach to nature of science teaching in early childhood education. *International Journal of Science Education*, *42*(12), 2095–2111.

Harlen, W. (2001). *The assessment of scientific literacy in the OECD/PISA project*.

Harp, S. F., & Mayer, R. E. (1997). The role of interest in learning from scientific text and illustrations: On the distinction between emotional interest and cognitive interest. *Journal of Educational Psychology*, *89*(1), 92.

Harpe, S. E. (2015). How to analyze Likert and other rating scale data. *Currents in Pharmacy Teaching and Learning*, *7*(6), 836–850. https://doi.org/10.1016/j.cptl.2015.08.001

Harras, K. A. (2011). Hakikat dan Proses Membaca. *K. Harras, ET Priyatni, & T. Harsiati, Membaca*, *1*.

Harsiati, T., & Priyatni, E. T. (2017). Karakteristik Tes Literasi Membaca Pada Programme For International Student Asessment (Pisa). *BIBLIOTIKA: Jurnal Kajian Perpustakaan Dan Informasi*, *1*(2), 1–11.

Haryadi, R., & Pujiastuti, H. (2020). The Science Literacy Capabilities Profile Using Guided Inquiry Learning Models. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, *6*(1), 81–88.

Hasanah, U., Sinaga, P., & Tarigan, D. E. (2017). Penggunaan Pendekatan Writing To Learn dalam Meningkatkan Literasi Sains Siswa SMP pada Materi Cahaya Dan Alat Optik. *Jurnal Pendidikan Fisika Dan Keilmuan (JPFK)*, *3*(2), 89–95.

Heroza, S., & Damaianti, V. S. (2019). Implementasi Program Gerakan Literasi Sekolah (GLS) Tingkat SMA Di MGMP Kabupaten Indragiri Hilir Riau. *Seminar Internasional Riksa Bahasa*.

Hewi, L., & Shaleh, M. (2020). Refleksi Hasil PISA (The Programme For International Student Assesment): Upaya Perbaikan Bertumpu Pada Pendidikan Anak Usia Dini. *Jurnal Golden Age*, *4*(01), 30–41.

Hidayahtika, F., Suprapto, P. K., & Hernawati, D. (2020). Keterampilan Literasi Sains Peserta Didik dengan Model Pembelajaran Reading, Questioning, and Answering (RQA) dalam Pembelajaran Biologi. *Quagga: Jurnal Pendidikan Dan Biologi*, *12*(1), 69–75.

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated:

A critical issue for the 21st century. *Review of Educational Research*, *70*(2), 151–179.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111–127.

Hock, M., & Mellard, D. (2005). Reading comprehension strategies for adult literacy outcomes. *Journal of Adolescent & Adult Literacy*, *49*(3), 192–200.

Holbrook, J., & Rannikmae, M. (2009). The meaning of scientific literacy. *International Journal of Environmental and Science Education*, *4*(3), 275–288.

Hsieh, F.-P., Lin, H., Liu, S.-C., & Tsai, C.-Y. (2019). Effect of Peer Coaching on Teachers' Practice and Their Students' Scientific Competencies. *Research in Science Education*, 1–24.

Huettig, F., & Pickering, M. J. (2019). Literacy advantages beyond reading: Prediction of spoken language. *Trends in Cognitive Sciences*, *23*(6), 464–475.

Huryah, F., Sumarmin, R., & Effendi, J. (2017). Analisis Capaian Literasi Sains Biologi Siswa SMA Kelas X Sekota Padang. *Jurnal Eksakta Pendidikan (JEP)*, *1*(2), 72–79.

Hwang, H. (2019). The role of science domain knowledge and reading motivation in predicting informational and narrative reading comprehension in L1 and L2: An international study. *Learning and Individual Differences*, *76*, 101782.

Indana, S., Agustini, R., & Rahayu, Y. S. (2018). Profile of Scientific Literacy Skills in Junior High School One Roof. *Mathematics, Informatics, Science, and Education International Conference (MISEIC 2018)*.

Ismail, I., Permanasari, A., & Setiawan, W. (2016). Efektivitas virtual lab berbasis STEM dalam meningkatkan literasi sains siswa dengan perbedaan gender. *Jurnal Inovasi Pendidikan IPA*, *2*(2), 190–201.

Jannah, A. M., Suwono, H., & Tenzer, A. (2020). Profile and factors affecting students' scientific literacy of senior high schools. *AIP Conference*

Proceedings, *2215*(1), 70021.

Jeong, H., Songer, N. B., & Lee, S.-Y. (2007). Evidentiary competence: sixth graders' understanding for gathering and interpreting evidence in scientific investigations. *Research in Science Education*, *37*(1), 75–97.

Jian, Y.-C., & Ko, H.-W. (2017). Influences of text difficulty and reading ability on learning illustrated science texts for children: An eye movement study. *Computers & Education*, *113*, 263–279.

Jurecki, K., & Wander, M. C. F. (2012). Science literacy, critical thinking, and scientific literature: Guidelines for evaluating scientific literature in the classroom. *Journal of Geoscience Education*, *60*(2), 100–105.

Katan, L., & Andreas Baarts, C. (2020). Inquiry-based reading–Towards a conception of reading as a research method. *Arts and Humanities in Higher Education*, *19*(1), 58–75.

Kennepohl, D., & Roesky, H. W. (2008). Drawing attention with chemistry cartoons. *Journal of Chemical Education*, *85*(10), 1355.

Kiemer, K., Gröschner, A., Pehmer, A.-K., & Seidel, T. (2015). Effects of a classroom discourse intervention on teachers' practice and students' motivation to learn mathematics and science. *Learning and Instruction*, *35*, 94–103.

Kirchner, E., & Mostert, M. L. (2017). Aspects of the reading motivation and reading activity of Namibian primary school readers. *Cogent Education*, *4*(1), 1411036.

Knain, E. (2001). Ideologies in school science textbooks. *International Journal of Science Education*, *23*(3), 319–329.

Kpolovie, P. J., Joe, A. I., & Okoto, T. (2014). Academic achievement prediction: Role of interest in learning and attitude towards school. *International Journal of Humanities Social Sciences and Education (IJHSSE)*, *1*(11), 73–100.

Krapp, A. (2002). Structural and dynamic aspects of interest development: Theoretical considerations from an ontogenetic perspective. *Learning and Instruction*, *12*(4), 383–409.

Krapp, A. (2007). An educational–psychological conceptualisation of interest. *International Journal for Educational and Vocational Guidance*, *7*(1), 5–21.

Kristianti Lawalata, A., & Sholeh, M. (2019). Pengaruh Program Literasi Sekolah Terhadap Minat Baca Dan Prestasi Belajar Siswa Di SMP Islam Al-Azhaar Tulungagung. *Inspirasi Manajemen Pendidikan*, *7*(3).

Lammers, A., Goedhart, M. J., & Avraamidou, L. (2019). Reading and synthesising science texts using a scientific argumentation model by undergraduate biology students. *International Journal of Science Education*, *41*(16), 2323–2346.

LaRusso, M., Kim, H. Y., Selman, R., Uccelli, P., Dawson, T., Jones, S., Donovan, S., & Snow, C. (2016). Contributions of academic language, perspective taking, and complex reasoning to deep reading comprehension. *Journal of Research on Educational Effectiveness*, *9*(2), 201–222.

Lasminawati, E., Lestari, N., Setiadi, D., & Jufri, A. W. (2019). Analisis Cakupan Literasi Sains Dalam Buku Pelajaran Biologi Pegangan Siswa Kelas XI Kurikulum 2013. *J. Pijar MIPA*, *20*(10).

Laugksch, R. C. (2000). Scientific literacy: A conceptual overview. *Science Education*, *84*(1), 71–94.

Lennox, R., Hepburn, K., Leaman, E., & van Houten, N. (2020). 'I'm probably just gonna skim': an assessment of undergraduate students' primary scientific literature reading approaches. *International Journal of Science Education*, *42*(9), 1409–1429.

Lennox, S. (2013). Interactive read-alouds—An avenue for enhancing children's language for thinking and understanding: A review of recent research. *Early Childhood Education Journal*, *41*(5), 381–389.

Lodge, W. (2020). 'Complex and confusing': the language demands of school science texts. *Research in Science & Technological Education*, 1–17.

Manfredo, M. J., Driver, B. L., & Tarrant, M. A. (1996). Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research*, *28*(3), 188–213.

Mason, L., & Boscolo, P. (2000). Writing and conceptual change. What changes? *Instructional Science*, *28*(3), 199–226.

Massey, S. L. (2014). Making the case for using informational text in preschool classrooms. *Creative Education*, *2014*.

Matuk, C., Hurwich, T., Spiegel, A., & Diamond, J. (2019). How do teachers use comics to promote engagement, equity, and diversity in science classrooms? *Research in Science Education*, 1–48.

Melida, H. N., Sinaga, P., & Feranie, S. (2016). Implementasi Strategi Writing to Learn untuk Meningkatkan Kemampuan Kognitif dan Keterampilan Berpikir Kritis Siswa SMA pada Materi Hukum Newton. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, *2*(2), 31–38.

Menadue, C. B., & Jacups, S. (2018). Who reads science fiction and fantasy, and how do they feel about science? Preliminary findings from an online survey. *SAGE Open*, *8*(2), 2158244018780946.

Michalsky, T. (2013). Integrating skills and wills instruction in self-regulated science text reading for secondary students. *International Journal of Science Education*, *35*(11), 1846–1873.

Mijaya, N. P. A. P., Sudiatmika, A. A. I. A. R., & Selamet, K. (2019). Profil Literasi Sains Siswa Smp Melalui Model Pembelajaran Levels of Inquiry. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia (JPPSI)*, *2*(2), 161–171.

Miller, J. D. (1983). Scientific literacy: A conceptual and empirical review. *Daedalus*, 29–48.

Miller, J. D. (2004). Public understanding of, and attitudes toward, scientific research: What we know and what we need to know. *Public Understanding of Science*, *13*(3), 273–294.

Miyake, S., & Nogami, T. (2015). What is Science for the Japanese Children in Informal Science Communication Media? – A Survey of the J-SLA Outstanding Science Trade Books. *Procedia - Social and Behavioral Sciences*, *167*, 178–183. https://doi.org/10.1016/j.sbspro.2014.12.659

Muhammad, G. (2020). *Implementasi Pendidikan Karakter Gemar Membaca Melalui Gerakan Literasi Sekolah (Studi Deskriptif Analisis Di SMPN 40 Bandung)*. Universitas Pendidikan Indonesia.

Musfiroh, T. (2007). Permasalahan Membaca dan Menulis di Kb dan Tk. *Jurnal Penelitian Humaniora*, *12*(2).

Mutlu, A. (2020). Evaluation of students' scientific process skills through reflective worksheets in the inquiry-based learning environments. *Reflective Practice*, *21*(2), 271–286.

Nbina, J., & Obomanu, B. J. (2010). The Meaning of Scientific Literacy: A model of relevance in science education. *Academic Leadership: The Online Journal*, *8*(4), 70.

Neri, N. C., Guill, K., & Retelsdorf, J. (2019). Language in science performance: do good readers perform better? *European Journal of Psychology of Education*, 1–17.

Nevo, E., & Vaknin-Nusbaum, V. (2018). Joint Reading of Informational Science Text Versus Narrative Stories: How Does each Affect Language and Literacy Abilities Among Kindergarteners? *Reading Psychology*, *39*(8), 787–819.

Norris, S. P., & Phillips, L. M. (2003). How literacy in its fundamental sense is central to scientific literacy. *Science Education*, *87*(2), 224–240.

Nugraha, A. B., Ramalis, T. R., & Purwanto, P. (2017). Pengembangan Bahan Ajar Web Fisika SMP Berorientasi Literasi Sains Pada Materi Kalor. *WaPFi (Wahana Pendidikan Fisika)*, *2*(1).

Nugroho, F. A. S. M. (2019). Peningkatan Minat Baca dan Literasi Sains

Menggunakan “Bacem Tempe” Di SMP Negeri 6 Temanggung. *Proceeding of Biology Education*, *3*(1), 150–160.

Nur’Aini, D., Rahardjo, S. B., & Susanti, V. H. E. (2018). Student’s profile about science literacy in Surakarta. *Journal of Physics: Conference Series*, *1022*(1), 12016.

Nurfaidah, S. S. (2017). Analisis Aspek Literasi Sains Pada Buku Teks Pelajaran Ipa Kelas V SD. *Mimbar Sekolah Dasar*, *4*(1), 56–66.

Nurjanah, A., Sudin, A., & Sujana, A. (2017). Literasi Sains Dalam Pembelajaran Berbasis Masalah (Penelitian Pre-experimental terhadap siswa kelompok atas, tengah, dan bawah SDN Waringin II dan SDN Palasah I di Kecamatan Palasah Kabupaten Majalengka pada Materi Energi Panas). *Jurnal Pena Ilmiah*, *2*(1), 581–590.

Nurkaeti, N. (2016). Pembiasaan membaca sebagai wujud pembelajaran literasi di sekolah dasar: pentingkah. *Prosiding Seminar Nasional Pendidikan Dasar Sekolah*, *2*.

Nurlatipah, N., Juanda, A., & Maryuningsih, Y. (2015). Pengembangan media pembelajaran komik sains yang disertai foto untuk meningkatkan hasil belajar siswa kelas VII SMPN 2 SUMBER pada pokok bahasan ekosistem. *Scientiae Educatia: Jurnal Pendidikan Sains*, *4*(2).

Nurpaidah, V. Z., Johan, R. C., & Rullyana, G. (2017). Hubungan Kegiatan Resume Dalam Gerakan Literasi Sekolah Dengan Hasil Belajar Siswa Pada Mata Pelajaran Bahasa Indonesia. *Edulibinfo*, *4*(2).

Nursholihat, K., Sujana, A., & Karlina, D. A. (2017). Peranan Media Komik Terhadap Literasi Sains Siswa SD Kelas V Pada Materi Daur Air (Penelitian Pre-Experimental Terhadap Siswa Kelas V SD Kecamatan Paseh Kabupaten Sumedang). *Jurnal Pena Ilmiah*, *2*(1), 711–720.

O’Reilly, T., & McNamara, D. S. (2007). The impact of science knowledge, reading skill, and reading strategy knowledge on more traditional “high-stakes” measures of high school students’ science achievement. *American*

Educational Research Journal, *44*(1), 161–196.

OECD. (2010). *PISA 2009 Results: What Students Know and Can Do-Volume I*. OECD París, Francia.

OECD. (2003). *Education at a Glance–2003 Edition*. OECD Paris.

OECD. (2007). *PISA 2006: Science Competencies for Tomorrow's World. Volume 1, Analysis*. OECD Publishing.

OECD. (2010). *PISA 2009 results: What students know and can do: Student performance in reading, mathematics and science (volume I)*. OECD Publishing Paris.

OECD. (2013). *PISA 2012 assessment and analytical framework: Mathematics, reading, science, problem solving and financial literacy*. OECD Publishing.

OECD. (2017). *PISA 2015 assessment and analytical framework: Science, reading, mathematic, financial literacy and collaborative problem solving*. OECD Publishing.

OECD. (2018). PISA for Development Brief. *Www.Oecd.Org*.

OECD, O. for E. C. and D. (2000). *Database: PISA 2000*.

Okyay, O., & Kandir, A. (2019). The impact of interactive storybook reading programme on scientific vocabulary acquisition by children. *Early Child Development and Care*, 1–11.

Oliveira, A. W., & Barnes, E. M. (2019). Elementary students' socialization into science reading. *Teaching and Teacher Education*, *81*, 25–37.

Palmer, T.-A., Burke, P. F., & Aubusson, P. (2017). Why school students choose and reject science: A study of the factors that students consider when selecting subjects. *International Journal of Science Education*, *39*(6), 645–662.

Pamungkas, Z. S., Aminah, N. S., Nurosyid, F., & Wahyuni, S. (2018). Students Critical Thinking Skill in Solving Scientific Literacy using a Metacognitive

Test Based on Scientific Literacy. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, *7*(2), 161–169.

Pappas, C. C. (2006). The information book genre: Its role in integrated science literacy research and practice. *Reading Research Quarterly*, *41*(2), 226–250. https://doi.org/10.1598/rrq.41.2.4

Paramita, A. D. (2016). *Pengembangan Bahan Ajar Berbasis Literasi Sains Materi Suhu dan Kalor*. Universitas Negeri Semarang.

Patterson, A., Roman, D., Friend, M., Osborne, J., & Donovan, B. (2018). Reading for meaning: The foundational knowledge every teacher of science should have. *International Journal of Science Education*, *40*(3), 291–307.

Pelger, S. (2018). Popular science writing bringing new perspectives into science students' theses. *International Journal of Science Education, Part B*, *8*(1), 1–13.

Permanasari, A. (2016). STEM education: Inovasi dalam pembelajaran sains. *Prosiding SNPS (Seminar Nasional Pendidikan Sains)*, *3*, 23–34.

Permatasari, F. (2019). Problematika Penerapan Gerakan Literasi Sekolah. *JURNAL KOULUTUS*, *2*(1), 138–143.

Perwitasari, T., Sudarmin, S., & Linuwih, S. (2017). Peningkatan literasi sains melalui pembelajaran energi dan perubahannnya bermuatan etnosains pada pengasapan ikan. *Jurnal Penelitian Pendidikan IPA*, *1*(2), 62–70.

Pilkington, O. A. (2017). Popular Science Versus Lab Lit: Differently Depicting Scientific Apparatus. *Science as Culture*, *26*(3), 285–306. https://doi.org/10.1080/09505431.2016.1255722

Prain, V., & Tytler, R. (2012). Learning through constructing representations in science: A framework of representational construction affordances. *International Journal of Science Education*, *34*(17), 2751–2773.

Pratiwi, S. N., Cari, C., & Aminah, N. S. (2019). Pembelajaran IPA Abad 21 dengan

Literasi Sains Siswa. *Jurnal Materi Dan Pembelajaran Fisika*, *9*(1), 34–42.

Puslitjakbud. (2019). Indeks Aktivitas Literasi Membaca 34 Provinsi. *Jakarta: Pusat Kebijakan Pendidikan & Kebudayaan Penelitian & Pengembangan Kementrian Pendidikan & Kebudayaan*.

Puspaningrum, A. (2019). Media Komik Berbasis Literasi Sains Pada Mata Pelajaran Ipa SD Untuk Menguatkan Motivasi Dan Hasil Belajar Kognitif Siswa. *Seminar Nasional Pendidikan Dasar*, *1*(01).

Putro, N. H. P. S., & Lee, J. (2017). Reading interest in a digital age. *Reading Psychology*, *38*(8), 778–807.

Qonita, Q., Mulyana, E. H., & Pranata, O. H. (2015). Pengaruh Keterampilan Menulis Sains Terhadap Pemahaman Konsep Energi Panas Dan Bunyi Siswa Sekolah Dasar. *PEDADIDAKTIKA: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, *2*(1), 93–107.

Rabagliati, H., Gambi, C., & Pickering, M. J. (2016). Learning to predict or predicting to learn? *Language, Cognition and Neuroscience*, *31*(1), 94–105.

Rahmawati, G. S. (2019). *Pengaruh Model Pembelajaran 3c3r Terhadap Kemampuan Literasi Sains Peserta Didik SMP Kelas VII Pada Materi Interaksi Makhluk Hidup Dengan Lingkungan*. Universitas Muhammadiyah Sukabumi.

Rakhmawan, A., Setiabudi, A., & Mudzakir, A. (2015). Perancangan pembelajaran literasi sains berbasis inkuiri pada kegiatan laboratorium. *Jurnal Penelitian Dan Pembelajaran IPA*, *1*(1), 143–152.

Reith, M., & Nehring, A. (2020). Scientific reasoning and views on the nature of scientific inquiry: testing a new framework to understand and model epistemic cognition in science. *International Journal of Science Education*, *42*(16), 2716–2741.

Ricardo, R., & Meilani, R. I. (2017). Impak minat dan motivasi belajar terhadap hasil belajar siswa. *Jurnal Pendidikan Manajemen Perkantoran (JPManper)*, *2*(2), 188–201.

Riyana, C. (2011). ICT dalam Perpustakaan. *Edulib*, *1*(1).

Rojas Rojas, S. P., Meneses, A., & Sánchez Miguel, E. (2019). Teachers' scaffolding science reading comprehension in low-income schools: how to improve achievement in science. *International Journal of Science Education*, *41*(13), 1827–1847.

Rusilowati, A, Astuti, B., & Rahman, N. A. (2019). How to improve student's scientific literacy. *Journal of Physics: Conference Series*, *1170*(1), 12028.

Rusilowati, Ani, Kurniawati, L., Nugroho, S. E., & Widiyatmoko, A. (2016). Developing an Instrument of Scientific Literacy Assessment on the Cycle Theme. *International Journal of Environmental and Science Education*, *11*(12), 5718–5727.

Rustono, W. (2010). Pengaruh Metode Pembelajaran Membaca dan Tingkat Kecerdasan terhadap Kemampuan Pemahaman Bacaan (Studi Eksperimen di SDN Dadaha I). *Jurnal Saung Guru*, *1*(2), 12–27.

Rychen, D. S. E., & Salganik, L. H. E. (2001). *Defining and selecting key competencies.* hogrefe & huber publishers.

Sadler, T. D., & Zeidler, D. L. (2009). Scientific literacy, PISA, and socioscientific discourse: Assessment for progressive aims of science education. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, *46*(8), 909–921.

Salamah, P. N., Rusilowati, A., & Sarwi, S. (2017). Pengembangan Alat Evaluasi Materi Tata Surya untuk Mengukur Kemampuan Literasi Sains Siswa SMP. *UPEJ Unnes Physics Education Journal*, *6*(3), 7–16.

Salma, A. (2019). Analisis Gerakan Literasi Sekolah Terhadap Minat Baca Siswa Siswa Sekolah Dasar. *MIMBAR PGSD Undiksha*, *7*(2).

Salonen, A., Hartikainen-Ahia, A., Hense, J., Scheersoi, A., & Keinonen, T. (2017). Secondary school students' perceptions of working life skills in science-related careers. *International Journal of Science Education*, *39*(10), 1339–1352.

Salsiah, A. (2015). Kemampuan menyusun hipotesis dalam pembelajaran ipa Melalui metode eksperimen pada peserta didik Kelas v sekolah dasar. *Jurnal Pendidikan Dasar*, *6*(2), 190–201.

Sardiman, A. (2011). Interaksi dan motivasi belajar mengajar. *Jakarta: Raja Grafindo Persada*.

Sari, D. N. A., Rusilowati, A., & Nuswowati, M. (2017). Pengaruh Pembelajaran Berbasis Proyek terhadap Kemampuan Literasi Sains Siswa. *PSEJ (Pancasakti Science Education Journal)*, *2*(2), 114–124.

Schiefer, J., Golle, J., Tibus, M., & Oschatz, K. (2019). Scientific reasoning in elementary school children: Assessment of the inquiry cycle. *Journal of Advanced Academics*, *30*(2), 144–177.

Schleicher, A. (2019). PISA 2018: Insights and Interpretations. *OECD Publishing*.

Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research. *Educational Psychology Review*, *13*(1), 23–52.

Sidiq, D. Z., Utari, S., & Nugraha, M. G. (2018). Rekonstruksi Rancangan Pembelajaran Sains Melalui Analisis Kesulitan Literasi Sains Siswa SMP Pada Topik Sifat Dan Perubahan Zat. *WaPFi (Wahana Pendidikan Fisika)*, *3*(2), 62–67.

Silvia, O. W., & Djuanda, D. (2017). Model Literature Based dalam Program gerakan Literasi sekolah. *Mimbar Sekolah Dasar*, *4*(2), 160–171.

Simon, U. K., Steindl, H., Larcher, N., Kulac, H., & Hotter, A. (2016). Young science journalism: Writing popular scientific articles may contribute to an increase of high-school students' interest in the natural sciences. *International Journal of Science Education*, *38*(5), 814–841.

Smolkin, L. B., McTigue, E. M., Donovan, C. A., & Coleman, J. M. (2009). Explanation in science trade books recommended for use with elementary students. *Science Education*, *93*(4), 587–610. https://doi.org/10.1002/sce.20313

Solikha, D. F. (2015). Bahan Ajar Asam-Basa Menggunakan Konteks Bahan Pengawet Makanan untuk Mengembangkan Literasi Sains SMK Jurusan Teknologi Pengolahan Hasil Pertanian (TPHP). *Jurnal Penelitian Pendidikan*, *15*(2).

Spiegel, A. N., McQuillan, J., Halpin, P., Matuk, C., & Diamond, J. (2013). Engaging teenagers with science through comics. *Research in Science Education*, *43*(6), 2309–2326.

Su, L. Y.-F., Cacciatore, M. A., Scheufele, D. A., Brossard, D., & Xenos, M. A. (2014). Inequalities in scientific understanding: Differentiating between factual and perceived knowledge gaps. *Science Communication*, *36*(3), 352–378.

Sudjana, N. (2017). *Penilaian Hasil Proses Belajar Mengajar*. Bandung: Remaja Rosdakarya.

Sugianto, H. (2013). Penerapan Model Kontekstual Berbantuan Multimedia Untuk Meningkatkan Penguasaan Konsep Dan Literasi Sains Siswa Pada Materi Fluida Di SMA Kelas XI IPA. *Jurnal Penelitian Pendidikan*, *14*(1).

Sumarra, M. Y., Wulan, A. R., & Nuraeni, E. (2020). Analisis Penggunaan Tes Tertulis tentang Keterampilan Mengevaluasi dan Merancang Penyelidikan Ilmiah pada Matapelajaran IPA-Biologi SMP. *Jurnal Penelitian Pendidikan*, *20*(2), 279–293.

Suryaman, M. (2015). Analisis hasil belajar peserta didik dalam literasi membaca melalui studi internasional (PIRLS) 2011. *Litera*, *14*(1).

Swarat, S., Ortony, A., & Revelle, W. (2012). Activity matters: Understanding student interest in school science. *Journal of Research in Science Teaching*, *49*(4), 515–537.

Tabačková, Z. (2015). Outside the classroom thinking inside the classroom walls: Enhancing students' critical thinking through reading literary texts. *Procedia-Social and Behavioral Sciences*, *186*, 726–731.

Tatalovic, M. (2009). Science comics as tools for science education and

communication: a brief, exploratory study. *Journal of Science Communication*, *8*(4), A02.

Tobias, S. (1994). Interest, prior knowledge, and learning. *Review of Educational Research*, *64*(1), 37–54.

Toharudin, U., Hendrawati, S., & Rustaman, A. (2011). Membangun literasi sains peserta didik. *Bandung: Humaniora*.

Velentzas, A., & Halkia, K. (2018). Scientific explanations in Greek upper secondary physics textbooks. *International Journal of Science Education*, *40*(1), 90–108. https://doi.org/10.1080/09500693.2017.1401251

Vieira, C., Magana, A. J., Roy, A., & Falk, M. L. (2019). Student explanations in the context of computational science and engineering education. *Cognition and Instruction*, *37*(2), 201–231.

Vinisha, K., & Ramadas, J. (2013). Visual representations of the water cycle in science textbooks. *Contemporary Education Dialogue*, *10*(1), 7–36.

WANG, J. H., & Guthrie, J. T. (2004). Modeling the effects of intrinsic motivation, extrinsic motivation, amount of reading, and past reading achievement on text comprehension between US and Chinese students. *Reading Research Quarterly*, *39*(2), 162–186.

Wildováa, R. (2015). Monitoring the use of innovative psycho-didactic processes in reading literacy development. *Procedia-Social and Behavioral Sciences*, *171*, 60–65.

Wright, T., & Neuman, S. (2009). *Purposeful, playful pre-k: Building on children's natural proclivity to learn language, literacy, math and science*.

Wulanjani, A. N., & Anggraeni, C. W. (2019). Meningkatkan Minat Membaca melalui Gerakan Literasi Membaca bagi Siswa Sekolah Dasar. *Proceeding of Biology Education*, *3*(1), 26–31.

Yang, F.-Y., Chang, C.-C., Chen, L.-L., & Chen, Y.-C. (2016). Exploring learners'

beliefs about science reading and scientific epistemic beliefs, and their relations with science text understanding. *International Journal of Science Education*, *38*(10), 1591–1606.

Yang, F.-Y., Liu, S.-Y., Hsu, C.-Y., Chiou, G.-L., Wu, H.-K., Wu, Y.-T., Chen, S., Liang, J.-C., Tsai, M.-J., & Lee, S. W.-Y. (2018). High-school students' epistemic knowledge of science and its relation to learner factors in science learning. *Research in Science Education*, *48*(2), 325–344.

Yun, E., & Park, Y. (2018). Extraction of scientific semantic networks from science textbooks and comparison with science teachers' spoken language by text network analysis. *International Journal of Science Education*, *40*(17), 2118–2136. https://doi.org/10.1080/09500693.2018.1521536

Zarrati, Z., Nambiar, R. M. K., & Maasum, T. N. R. T. M. (2014). The importance of text structure awareness in promoting strategic reading among EFL readers. *Procedia-Social and Behavioral Sciences*, *118*, 537–544.

Zhu, Y. (2019). How Chinese students' scientific competencies are influenced by their attitudes? *International Journal of Science Education*, *41*(15), 2094–2112.